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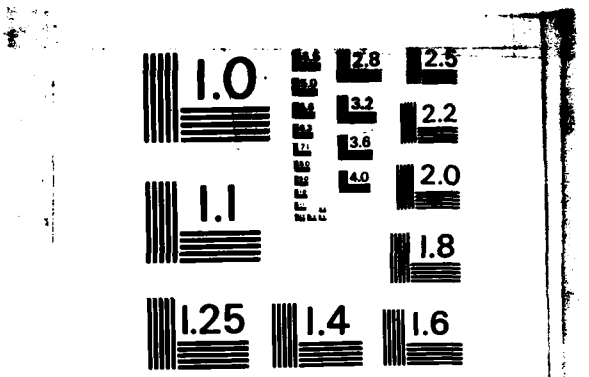

FINAL REPORT ON
A LOGISTICS SOURCE MATERIAL SYSTEM
FOR THE AIR FORCE LOGISTICS MANAGEMENT CENTER

by

W. E. Caves
W. H. Marlow
Shelemyahu Zacks

THE GEORGE WASHINGTON UNIVERSITY

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AND APPLIED SCIENCE

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Program in Logistics
GWU/IMSE/Serial T-476/83
30 August 1983

THE GEORGE WASHINGTON UNIVERSITY
School of Engineering and Applied Science
Washington, DC 20052

Institute for Management Science and Engineering

Research Supported
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Air Force Contract F01600-80-D0299

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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DATA RETRIEVAL
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LOGISTICS STUDIES

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Logistics Source Materials System is used by the Air Force Logistics Management Center to collect, categorize, store, retrieve, and manage logistics source materials. It is based on the IBM Storage and Information Retrieval System installed on an IBM 4331 computer. The present report describes two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange, Fort Lee, VA, and a

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20. Abstract (Cont'd)

data entry program DATENT which was written to facilitate manual entries. An approach to a possible "Handbook of Models and Source Data" is also presented.

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The Logistics Source Materials System is used by the Air Force Logistics Management Center to collect, categorize, store, retrieve, and manage logistics source materials. It is based on the IBM Storage and Information Retrieval System installed on an IBM 4331 computer. The present report describes two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange, Fort Lee, VA, and a data entry program DATENT which was written to facilitate manual entries. An approach to a possible "Handbook of Models and Source Data" is also presented.

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1. Summary

The Logistics Source Materials System (LSMS) is used by the Air Force Logistics Management Center (AFLMC) to collect, categorize, store, retrieve, and manage logistics source materials. In the present report, attention is confined to descriptions and specifications covering governmental and non-governmental research projects and studies, their associated models and data bases, and similar materials for Air Force logistics and logistics management. Examples of the latter are published and unpublished articles, books, conference proceedings, histories, proposals, and government regulations.

The LSMS is based on the IBM Storage and Information Retrieval System (STAIRS) installed on the IBM 4331 computer at the AFLMC. As described in [9], STAIRS is a multi-user system for the storage and retrieval of documents. Organized data bases may contain formatted and non-formatted data and inquiries proceed through step-by-step dialogues using convenient commands such as BROWSE, SEARCH, SELECT, SORT, PRINT, and so on. STAIRS can be used together with many other systems and programs so that the major operational concern in extending the LSMS is for efficient loading of data into STAIRS.

Sections 2 and 3 of the present report describe two data bases constructed from computer tape files produced by the Defense Logistics Studies Information Exchange (DLSIE), Fort Lee, VA, namely, the DLSIE studies tape [6] and the DLSIE models tape [7]. These were used (see [4]) to produce data bases which are major prototypes for the LSMS in the sense that they are large files of data which have been transformed into formats acceptable as input for STAIRS.

Section 4 describes a data entry program DATENT (see [5] and [8]) which was written to facilitate manual entry of logistics source materials into STAIRS. Use of such a program is convenient for entering a wide variety of documents into the STAIRS system.

Section 5 outlines an approach to a possible "Handbook of Models and Source Data" which is presented in [10]. Such a handbook would extend the "AFLMC Bibliography" (see [2] and [3]) and other sources of logistics models such as the preeminent DLSIE models data base used for Section 3. The series of six reports in [1] is used as the example in [10] to illustrate the approach to such a handbook.

The following recommendations are made in Section 6.

(1) The DLSIE studies and models tapes should be loaded into STAIRS and analyzed as two data bases of the LSMS.

(2) The DATENT program should be implemented at the AFLMC to assist manual input of data to the LSMS.

(3) The AFLMC should establish requirements for machine readable STAIRS inputs from its major sources of data.

(4) A "Handbook of Models and Source Data," as illustrated by [10], should not be implemented for any sizable number of logistics models; it would be too expensive and it could not be expected to improve on the practice of using the DLSIE data bases, and others, to identify sources which could then be pursued as appropriate to obtain detailed information.

(5) The AFLMC Bibliography [3] should continue to be maintained as a separate data base in the LSMS.

2. The DLSIE studies tape

As described in Reference [6], DLSIE produced a magnetic tape file version of a custom bibliography, namely, the "DLSIE studies tape," as a one-time accommodation to assist the Program in Logistics in completing the present subcontract with the AFLMC. Production was achieved by altering standard computer programs used by DLSIE whereby all "write to printer" commands were replaced by "write to tape." Reference [4] treats the de-editing of the tape and the generation of input for STAIRS. The present section describes products obtained from this tape.

The custom bibliography was produced by DLSIE on 1 August 1983 with resulting output of a magnetic tape file rather than a standard computer printout. All such bibliographies are collections of study abstracts, each one of which summarizes a single document by means of a one- or two-page computer printout. In the present case, the search criteria were the following.

> Only completed documents with publication dates in 1978 or later
>
> All documents sponsored or performed by the U.S. Air Force
>
> All aircraft-related documents by all sponsors and all performers
>
> All documents entered from periodical publishers (for all sponsors, all performers, and all topics)

A total of 5,774 documents satisfied these criteria. The machine-readable version was recorded on a reel of 9-track 1600 BPI tape. The printed version would have consisted of over 6,000 pages--about 2 1/2 standard cartons of paper--and it was not printed. Instead, a 145-page "DLSIE studies tape LD index," where one line appears for each document in the custom bibliography, and a 51-page "One percent sample from the DLSIE studies tape," were printed and included as appendixes to [6].

Figure 1 consists of a sample page from the index. The first entry in each line is the four-digit document number which records the serial location of the document on the tape. Second is the logistics document (LD) number which DLSIE assigns and uses to prepare custom bibliographies and to furnish microfiche copies of documents it distributes. The initial segment of the title appears third on each line and it is followed by the initial segment of the name of the performing organization (or name of the periodical publication).

DLSIE STUDIES TAPE LD INDEX

5203 LD 550300	TRAINING: NAVSUP'S APPROACH.	NAVY SUPPLY CORPS NEWSLETTER, SUPPLY SYSTEMS COMMAND	...
5204 LD 55030E	SEAHAWK LIGHTS THE WAY FOR LAMPS MARK III.	NAVY SUPPLY CORPS NEWSLETTER, SUPPLY SYSTEMS COMMAND	...
4978 LD 55038A	NAVAL TACTICS.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4979 LD 550398	SUBMARINES IN SOVIET ASW DOCTRINE AND TACTICS.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4980 LD 55039C	DID IT REALLY MATTER?	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4981 LD 550390	NAVAL OPTION FOR THE CARIBBEAN: THE U.S. COAST GUARD.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4982 LD 55039E	CLAUSEWITZ AND STRATEGY TODAY.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4983 LD 55039F	WHEN DETERRENCE FAILS: THE NASTY LITTLE WAR FOR THE	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4984 LD 55039G	WOODROW WILSON AND INTERNATIONAL STATECRAFT: A	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
4985 LD 55039H	PRESERVING NUCLEAR PEACE.	NAVAL WAR COLLEGE REVIEW, US NAVAL WAR COLLEGE,	.....
2591 LD 55040A	GOVERNMENT PROPERTY IN THE POSSESSION OF CONTRACTORS.	AIR FORCE AUDIT AGENCY, NORTON AFB, CA 92409	
3007 LD 55041A	EFFECT OF TEST RESULT UNCERTAINTY ON THE PERFORMANCE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE	.....
917 LD 55044A	ESTIMATING AIRCREW FATIGUE: A TECHNIQUE WITH	AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS	.....
2630 LD 55049A	THE ROTATION/ASSIGNMENT SYSTEM OF IMBALANCED AIR	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
5309 LD 55050A	PROGRAM MANAGEMENT.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5310 LD 550508	INDEPENDENT RESEARCH AND DEVELOPMENT: GATEWAY TO	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5311 LD 55050C	ACQUIRING SYSTEMS AT ECONOMIC PRODUCTION RATES.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5312 LD 55050D	SECOND SOURCING: A WAY TO ENHANCE PRODUCTION	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5313 LD 55050E	UNIFIED SYSTEM EFFECTIVENESS ANALYSIS AND CONTROL:	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5314 LD 55050F	BRAINSIDEDNESS: WHAT WE DO KNOW CAN HELP US.	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5315 LD 55050G	WHAT PRICE DEFENSE? PROFIT AND PROFITABILITY IN	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
5316 LD 55050H	INITIATIVES FOR BUILDING ADAPTABILITY AND	PROGRAM MANAGERS NEWSLETTER, DEFENSE SYSTEMS	.....
2592 LD 55061A	MAINTENANCE ALTERNATIVES FOR AUTOMATIC DATA	AIR FORCE AUDIT AGENCY, NORTON AFB, CA 92409	
2631 LD 55063A	STATISTICAL TECHNIQUES FOR DETERMINING OFFICER	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
2632 LD 55064A	FACTORS INFLUENCING ARMY ACCESSIONS.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
2633 LD 55065A	MODELS OF AN INTEGRATED DESIGN DATA BASE IN SUPPORT	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
2634 LD 55066A	DYNAMIC CHARACTERISTICS OF AERIAL REFUELING SYSTEMS.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
2635 LD 55067A	THE SIMULATION OF A PASSIVE SOLAR ENERGY SYSTEM.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
2636 LD 55068A	A SECURE COMPUTER NETWORK.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF	.....
3861 LD 55070A	MISCELLANEOUS LOGISTICS SUBJECTS.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3862 LD 55070B	EQUIPPING THE TOTAL FORCE - THE TAEDP.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3863 LD 55070C	FIXING FORWARD IN EUROPE.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3864 LD 55070D	LAMP-LIGHTING THE WAY TO LOGISTICS AUTOMATION.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3865 LD 55070E	BATTLE AREA LOGISTICS IN THE FUTURE.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3866 LD 55070F	CBS-X-THE ARMY'S EYE ON MAJOR ITEMS.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
3867 LD 55070G	TRAINING TIPS FOR COMBAT SERVICE SUPPORT.	ARMY LOGISTICIAN, US ARMY LOGISTICS MANAGEMENT	.....
5526 LD 55074A	MISCELLANEOUS TRANSPORTATION TOPICS.	TRANSLOG, MILITARY TRAFFIC MANAGEMENT COMMAND,	.....
591 LD 55075A	F-16 TECHNOLOGY MODERNIZATION PROGRAM. SEMIAUTOMATIC	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101	
592 LD 55075B	F-16 TECHNOLOGY MODERNIZATION PROGRAM. COST TRACKING	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101	
593 LD 55075C	F-16 TECHNOLOGY MODERNIZATION PROGRAM. SHOP PRIORITY	GENERAL DYNAMICS/FORT WORTH, FORT WORTH, TX 76101	

Figure 1

Figure 2 consists of a page from the one percent sample. All data for 58 documents appear in [6] accompanied by STAIRS identifiers. The entire sample consists of every 100th document where the sequencing of the tape--primary is agency and secondary is LD number, as used by DLSIE--was retained. The final columns in Figure 2 contain the serial document numbers for the tape and the line numbers within STAIRS paragraph codes. Generally there is one document per printed page as illustrated by Figure 2 but some documents require more than one page and others fit two per page. Even in the present compactly printed two-sided form, the complete bibliography of 5,774 documents would be about 11 inches thick.

3. The DLSIE models tape

As described in [7], a custom catalog of models was produced by DLSIE on 1 August 1983 with resulting output of a magnetic tape file, namely, the "DLSIE models tape," rather than a standard computer printout. All such catalogs are collections of model abstracts, each one of which summarizes a model by means of a one or two page computer printout. The search criteria were counterparts of those for the studies tape, namely, the following.

> Only completed models with publication dates in 1978 or later
>
> All models sponsored or performed by the U.S. Air Force
>
> All aircraft-related models by all sponsors and all performers
>
> All models entered from periodical publishers (for all sponsors, all performers, and all topics)

A total of 383 models satisfied these criteria and the machine-readable version of the catalog was recorded on a reel of 1600 BPI tape. The printed version would have consisted of about 400 pages and it was not printed. Instead, a 10-page "DLSIE models tape LD index," and a 39-page "Ten percent sample from DLSIE models tape," were printed and included as appendixes in [7].

Figure 3 consists of a sample page from the index and Figure 4 consists of a page from the printed sample. In a manner similar to that for the studies, the present sample consists of every 10th model where the sequencing of the tape--primary is agency and secondary is LD number--was retained. Generally there is one model per page but some models require more than one page. In its present compactly printed two-sided form, The entire custom catalog would be about 2 1/2 inches thick.

PROGRAM IN LOGISTICS
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09/12/83 THE GEORGE WASHINGTON UNIVERSITY 105548

ONE PERCENT SAMPLE FROM DLSIE STUDIES TAPE

DOCUMENT NUMBER	***	LD 49971B	00901001
DATE	0A0	1980	00901001
TITLE	010	STRUCTURAL FLIGHT LOADS SIMULATION CAPABILITY. V. 2 - STRUCTURAL	00901001
		ANALYSIS COMPUTER PROGRAM USERIS MANUAL.	00901002
AUTHOR	020	T. S. BRUNER, M. P. BOUCHARD, M. J. HECHT AND F. K. BOGNER.	00901001
REPORT-NUMBER	030	TR-80-3118	00901001
TYPE-OF-REPORT	040	CONTRACT STUDY	00901001
PERFORMER	050	UNIVERSITY OF DAYTON, RESEARCH INSTITUTE, DAYTON, OH 45409	00901001
D-PERF-CONTRACT-N	058	F33615-76-C-3135	00901001
SPONSOR	060	AIR FORCE FLIGHT DYNAMICS LABORATORY, AIR FORCE SYSTEMS COMMAND,	00901001
		WRIGHT-PATTERSON AIR FORCE BASE, OH 45433	00901002
PAGES	070	346	00901001
CLASSIFICATION	080	UNCLASSIFIED	00901001
D-AD-NUMBER	092	A096 594	00901001
D-RELEASE-LIMIT	094	UNLIMITED	00901001
D-AVAILABLE-FROM	096	DLSIE	00901001
D-SUBJECT	102	OPERATIONS	00901001
		MATERIEL	00901002
D-FUNCTION	104	SIMULATION	00901001
		EVALUATION	00901002
D-DESCRIPTORS	106	FLIGHT SIMULATORS	00901001
		STRUCTURAL MEMBERS	00901002
		AIRCRAFT COMPONENTS	00901003
		SIMULATIONS	00901004
		AIRCRAFT	00901005
		DAMAGE ASSESSMENT	00901006
		SURVIVABILITY	00901007
		VULNERABILITY	00901008
ABSTRACT	110	THIS DOCUMENT, VOLUME II OF THE MAIN STUDY, (LD 49971A), DESCRIBES	00901001
		THE USE OF THE COMPUTER PROGRAMS FOR THE VARIOUS COMPUTER PROGRAMS	00901002
		DEVELOPED TO FULFILL THE CONTRACT OBJECTIVES. IT SERVES AS A USER'S	00901003
		GUIDE FOR THE UTILIZATION OF SEVERAL INTERDEPENDENT COMPUTER PROGRAMS	00901004
		WHICH WERE DESIGNED TO PROVIDE THE SURVIVABILITY/VULNERABILITY	00901005
		ENGINEER WITH A TOOL FOR THE UTILIZATION OF FINITE ELEMENT MODELS IN	00901006
		THE STIMULATION OF STRUCTURAL FLIGHT LOADING OF WINGS AND WING	00901007
		COMPONENTS.	00901008
D-CONCLUSIONS	112	SEE FINAL REPORT (LD 49971B).	00901001
D-RECOMMENDATIONS	114	SEE FINAL REPORT (LD 49971B).	00901001
D-IMPLEMENT-ACTNS	116	SEE FINAL REPORT (LD 49971B).	00901001
D-PRODUCT	900	STUDY ABSTRACT	00901001
D-AGENCY	910	DEPARTMENT OF THE AIR FORCE	00901001
D-SEARCH-NUMBER	920	83-01202	00901001
D-STATUS	940	COMPLETED	00901001
D-UPDATE-DATE	970	APR 83	00901001

PAGE 010

Figure 2

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DLSIE MODELS TAPE LD INDEX

312	LD 50010MA	COST FUNCTION FOR MILITARY AIRFRAMES.	CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES.
313	LD 50012MA	COST FUNCTION FOR AN AIRFRAME PRODUCTION PROGRAM.	CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES.
367	LD 50014MA	SLOT ALLOCATION MODEL FOR HIGH-DENSITY AIRPORTS.	NOAH (J. WATSON) ASSOCIATES, INC., ALEXANDRIA, VA 22313
118	LD 50015MA	METHOD FOR COMPUTATION OF STRUCTURAL FAILURE	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS
37	LD 50017MA	PERFORMANCE ANALYSIS OF THE PRODUCT IMPROVED VULCAN	DARCOM MATERIEL SYSTEMS ANALYSIS ACTIVITY, ABERDEEN
109	LD 50255MA	HUMAN OPERATOR GUNNER MODEL FOR TRACER-DIRECTED	SYSTEMS RESEARCH LABORATORIES, INC., DAYTON, OH 45440
280	LD 50395MA	EMPIRICAL INVESTIGATION OF THE EFFECTS OF INVENTORY	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
281	LD 50396MA	MULTIPLE MODEL FORECASTING AS AN ALTERNATIVE TO THE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
282	LD 50465MA	LOGISTICS COMPOSITE MODEL --- INVESTIGATION INTO A	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
283	LD 50466MA	REPARABLE ASSETS SYSTEM POLICY ANALYSIS MODEL ---	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
284	LD 50468MA	PRESCRIPTIVE MODEL FOR RESOURCE ALLOCATION AT THE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
285	LD 50470MA	SOURCE SELECTION DECISION PROCESS IN AERONAUTICAL	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
286	LD 50472MA	ANALYSIS OF A PROPOSED MATERIAL HANDLING SYSTEM	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
250	LD 50479MA	STRATEGIC AIRLIFT: U.S. TO EUROPE.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
251	LD 50490MA	OPTIMIZATION OF STRATEGIC AIRLIFT IN-FLIGHT REFUELING.	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
287	LD 50511MA	WEAPON SYSTEM SPARES SUPPORT MODEL.	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
252	LD 50513MA	DECISION ANALYSIS SUPPORT SYSTEM --- ENHANCED	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF
194	LD 50718MA	LIFE CYCLE COSTING OF SIMULATED VS ACTUAL EQUIPMENT	HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS
195	LD 50718MB	SIMULATOR LOGISTICS SUPPORT COST MODEL --- ACTUAL VS	HUMAN RESOURCES LABORATORY, AIR FORCE SYSTEMS
305	LD 50750MA	PHOENIX: AN AIR BASE SIMULATION USER MANUAL.	JOINT STUDIES GROUP, TAC, NELLIS AIR FORCE BASE, NV
74	LD 50933MA	MODEL FOR ESTIMATING AIRCRAFT COST OF OWNERSHIP ---	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA,
75	LD 50978MA	METHOD FOR ESTIMATING THE COST OF AIRCRAFT	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA,
288	LD 51060MA	DEVELOPMENT OF A MULTIPLE LINEAR REGRESSION MODEL TO	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
289	LD 51061MA	AFIT RUNOFF MODEL --- SIMULATION OF RUNOFF FROM AN	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
356	LD 51067MA	ENVIRONMENTAL CONTROL ANALYSIS SYSTEM --- F-14A	THE BOEING COMPANY, SEATTLE, WASH. 98124
66	LD 51112MA	HELICOPTER SURVIVABILITY ASSESSMENT MODEL: VOL I -	SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E.,
67	LD 51112MB	HELICOPTER SURVIVABILITY ASSESSMENT MODEL: VOL II -	SCIENCE APPLICATIONS, INC., 4615 HAWKINS N.E.,
290	LD 51114MA	FIRST TO FIGHT: A BATTLE SIMULATION AT THE SQUAD	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
337	LD 51198MA	GENERALIZED ESCAPE SYSTEM SIMULATION COMPUTER	NAVAL AIR DEVELOPMENT CENTER, JOHNSVILLE,
55	LD 51365MA	EVALUATION OF AIR DEFENSE EFFECTIVENESS MODEL --- A	US ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND,
291	LD 51458MA	HEATING PLANT OPERATING COST MODEL --- ECONOMIC	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
191	LD 51490MA	OPTIMAL STAGING AND SCHEDULING IN AIRLIFT OPERATIONS.	AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS
314	LD 51491MA	LEARNING AND COSTS IN AIRFRAME PRODUCTION; PART I.	CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES.
315	LD 51492MA	LEARNING AND THE COST OF PRODUCTION.	CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES.
316	LD 51499MA	SPECIFICATION AND ESTIMATION OF DYNAMIC COST	CLEMSON UNIVERSITY, DEPT. OF MATHEMATICAL SCIENCES.
292	LD 51500MA	SIMULATION OF THE BASE CIVIL ENGINEERING WORK	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE
213	LD 51674MA	FAILURE-FREE RELIABILITY TESTS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
119	LD 51675MA	DIGITAL SIMULATION PROGRAM DESCRIBING THE MOTION OF	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS
321	LD 51770MA	AIRCRAFT AND CREW SCHEDULING DURING AIRLIFT OPERATIONS.	UNIVERSITY OF TEXAS, CENTER FOR CYBERNETIC STUDIES.
120	LD 51774MA	VULNERABILITY ESTIMATORS FOR CONCEPTUAL AIRCRAFT (U).	AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS

Figure 3

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09/12/83 THE GEORGE WASHINGTON UNIVERSITY 105219

TEN PERCENT SAMPLE FROM DLSIE MODELS TAPE

DOCUMENT NUMBER	***	LD 46241MF	00011001
DATE	040	1981	00011001
TITLE	010	SORTIE-GENERATION MODEL SYSTEM; VOL VI - SPARES SUBSYSTEM.	00011001
REPORT-NUMBER	030	ML102	00011001
PERFORMER	050	LOGISTICS MANAGEMENT INSTITUTE, 4701 SANGAMORE RD., P. O. BOX 9489,	00011001
		WASHINGTON, DC 20016	00011002
D-PERF-CONTACT	052	J B ABELL, F M SLAY	00011001
D-PERFORMER-PHONE	054	AV 287-2779	00011001
SPONSOR	060	ASSISTANT SECRETARY OF DEFENSE (MANPOWER, RESERVE AFFAIRS AND	00011001
		LOGISTICS), WASHINGTON, DC 20301	00011002
CLASSIFICATION	080	UNCLASSIFIED	00011001
D-RELEASE-LIMIT	094	UNLIMITED	00011001
D-AVAILABLE-FROM	096	DLSIE	00011001
D-SUBJECT	102	MATERIEL	00011001
D-FUNCTION	104	MAINTAINING	00011001
		ALLOCATING RESOURCES	00011002
D-DESCRIPTORS	106	MATERIEL READINESS	00011001
		READINESS	00011002
		SUPPORT COSTS	00011003
		MANPOWER	00011004
		MAINTENANCE PERSONNEL	00011005
		WEAPON SYSTEMS	00011006
		REPAIR PARTS	00011007
ABSTRACT	110	THIS VOLUME IS THE LAST OF THE SIX VOLUMES THAT DESCRIBE THE	00011001
		SORTIE-GENERATION MODEL (SGM) SYSTEM. IT DESCRIBES THE PROCESS OF	00011002
		CONSTRUCTING A SPARES DATA BASE FOR INPUT TO THE SGM. AN OVERVIEW OF	00011003
		THE ENTIRE SGM SYSTEM IS CONTAINED IN VOLUME ONE, THE EXECUTIVE	00011004
		SUMMARY (LD NO. 46241MA).	00011005
D-MODEL-RECOMMEND	117	SEE LD NO. 46241MA.	00011001
D-MODEL-INPUT	118	SEE LD NO. 46241MA.	00011001
D-MODEL-OUTPUT	119	SEE LD NO. 46241MA.	00011001
D-MODEL-ACRONYM	800	SGM	00011001
D-M-ACCESSION-DAT	816	FEB 82	00011001
D-M-CATEGORY	818	SIMULATION	00011001
D-M-USE-CATEGORY	822	ANALYSIS AND DIAGNOSIS	00011001
D-M-APPLIC-TECHN	826	DIGITAL COMPUTER	00011001
D-M-SOLUTION-TECH	828	OR (MISC)	00011001
D-M-COMPUTER-TYPE	830	HONEYWELL G-635	00011001
D-M-LANGUAGE-USED	832	FORTRAN	00011001
D-M-MIN-STORAGE	834	20K WORDS	00011001
D-M-RUN-TIME	836	8 CPU MIN	00011001
D-M-LINES-OF-CODE	838	15000	00011001
D-M-PRODUCT	900	MODEL ABSTRACT	00011001
D-AGENCY	910	DEPARTMENT OF DEFENSE	00011001
D-SEARCH-NUMBER	920	83-00123	00011001
D-STATUS	940	COMPLETED	00011001
D-START-DATE	950	OCT 79	00011001
D-LAST-UPDATED	970	FEB 82	00011001

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Figure 4

Figure 5 is a page from the five-page listing from [7], "Common entries in studies and models files," which furnishes cross references for the present custom catalog and the custom bibliography. The two tapes were matched on the numeric portions of the LD numbers and then the LD numbers and initial segments of titles and names of performing organizations were listed in forms similar to those previously illustrated by Figures 1 and 3. With only minor exceptions--see the entries in Figure 5 for LD Numbers having numeric portions 49111--common entries identify "studies" whose "models" have also been entered by DLSIE.

4. The DATENT program

A data entry system was created as part of the present effort. The system is based upon a sequential access data file, a copy action update facility, and a STAIRS format conversion program. Operating instructions and source codes for the programs are listed in [5]. The program is "portable" in the sense that only two changes are required for installation, namely, a new (COBOL) Environment Section and a native "clear screen" routine.

The sequential access data file consists of fixed format 64-character records each containing the subject document number (5 digits), card type number (3 digits), card type sequence number (2 digits), a filler character, and the text data area (53 characters). The sequence of this file is strictly ascending on columns 1 thru 10 (document number, card type number, and card type sequence number). Also, each document is limited to a maximum of 100 records (a restriction imposed by the current update program).

The data entry update program, DATENT, is a control card driven document update facility implemented in American National Standard COBOL, X3.23-1974. This program will update documents by record insertion and or deletion, insert documents, and delete documents. This program is control card driven in that, for each allowed record type in a document, a control card defines both its record format and the operator prompt to be used for record display, insertion, and deletion. The program will also translate record type numbers, reordering records within a document to maintain the data file's sequence on columns 1 thru 10, and delete record types as requested by the control card stream.

The STAIRS format conversion program, STAIRS, converts the 64-character data entry system record format to the 80-character STAIRS record format. The STAIRS output file consists of 128-character records of which the first 80 characters of each record is a STAIRS record. The program converts card type numbers 001 and 005 to AFLMC STAIRS card codes *** and 0A0, respectively. All other STAIRS card codes are copied directly from the data entry system format. This program is also implemented in American National Standard COBOL, X3.23-1974.

COMMON ENTRIES IN STUDIES AND MODELS FILES

2782SLD 47679A	A COMPARATIVE ANALYSIS OF TWO COST PERFORMANCE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
277MLD 47679MA	COMPARATIVE ANALYSIS OF TWO COST PERFORMANCE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
3213SLD 48241A	Q-GERT APPROACH TO AIRCRAFT COST/READINESS ANALYSIS, ...	NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 93940
331MLD 48241MA	QUEUING GRAPHICAL EVALUATION AND REVIEW TECHNIQUE -- ...	NAVAL POSTGRADUATE SCHOOL, MONTEREY, CA 93940
39SLD 48376A	ESTIMATING USAF AIRCRAFT RECOVERABLE SPARES INVESTMENT.	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, ...
16MLD 48376MA	ESTIMATING USAF AIRCRAFT RECOVERABLE SPARES INVESTMENT.	THE RAND CORPORATION, 1700 MAIN ST., SANTA MONICA, ...
2835SLD 48469A	AN APPROACH TO WORKLOAD ASSIGNMENT AND SCHEDULING OF ...	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
278MLD 48469MA	APPROACH TO WORKLOAD ASSIGNMENT AND SCHEDULING OF	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
2843SLD 48576A	AN INVESTIGATION OF THE EFFECT OF PRODUCTION RATE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
279MLD 48576MA	PRODUCTION RATE MODEL - - - INVESTIGATION OF THE	THE SCHOOL OF SYSTEMS AND LOGISTICS, AIR FORCE .....
4801SLD 49111A	LOGISTICS MODELS.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4802SLD 49111B	A LINEAR PROGRAMMING MODEL FOR DESIGN OF	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4803SLD 49111C	PREVENTIVE MAINTENANCE AND REPLACEMENT UNDER	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4804SLD 49111D	OPTIMAL MAINTENANCE MODELS FOR SYSTEMS SUBJECT TO	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4805SLD 49111E	BOUNDS FOR STRENGTH-STRESS INTERFERENCE VIA	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4806SLD 49111F	BOUNDS AND ELIMINATION IN GENERALIZED MARKOV DECISIONS.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4807SLD 49111G	SURROGATE DUALITY IN A BRANCH-AND-BOUND PROCEDURE.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4808SLD 49111H	EXTREME SOLUTIONS OF THE TWO MACHINE FLOW-SHOP PROBLEM.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4809SLD 49111J	A THEORETICAL AND COMPUTATIONAL COMPARISON OF	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4810SLD 49111K	STOCHASTIC MODELS FOR SPREAD OF MOTIVATING INFORMATION.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4811SLD 49111L	MAXIMAL NASH SUBSETS FOR BIMATRIX GAMES.	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4812SLD 49111N	A CHARACTERIZATION OF THE VALUE OF ZERO-SUN	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4813SLD 49111P	MANPOWER MODELING IN COST EFFECTIVENESS OF USAF	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
4814SLD 49111Q	AN EMPIRICAL EVALUATION OF FURTHER APPROXIMATIONS TO ...	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
363MLD 49111MD	OPTIMAL MAINTENANCE MODELS FOR SYSTEMS SUBJECT TO	NAVAL RESEARCH LOGISTICS QUARTERLY, OFFICE OF NAVAL ....
486SLD 49228A	NOISEMAP--THE USAF'S COMPUTER PROGRAM FOR PREDICTING ...	AEROSPACE MEDICAL RESEARCH LABORATORY, AEROSPACE .....
108MLD 49228MA	NOISEMAP - THE USAF'S COMPUTER PROGRAM FOR	AEROSPACE MEDICAL RESEARCH LABORATORY, AEROSPACE .....
3387SLD 49402B	RELATIVE IMPACT ON LEVEL OF REPAIR ALTERNATIVES ON	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
3388SLD 49402BA	PLAN FOR REVIEW AND ANALYSIS OF THE F-18 MAINTENANCE ...	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
3389SLD 49402BD	F-18 MAINTENANCE SUPPORT PLAN CONCEPTS RELATIVE TO	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
359MLD 49402MB	LEVEL OF REPAIR ANALYSIS --- RELATIVE IMPACT ON	INTEGRATED FIELD ENGINEERING SERVICES & TRAINING .....
1963SLD 49465A	SUPPLY PERFORMANCE INDICATORS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
218MLD 49465MA	SUPPLY PERFORMANCE INDICATORS.	UNITED STATES AIR FORCE ACADEMY, CO 80840
2620SLD 49518A	A SYSTEMS DYNAMICS MODEL FOR ASSESSING THE	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
247MLD 49518MA	SYSTEM DYNAMICS MODEL FOR ASSESSING THE	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
2621SLD 49519A	COMPUTER SIMULATION OF SOLAR AIR HEATING SYSTEMS	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
248MLD 49519MA	COMPUTER SIMULATION OF SOLAR AIR HEATING SYSTEMS	SCHOOL OF ENGINEERING, AIR FORCE INSTITUTE OF .....
4SLD 49821A	THE TASCFORM-AIR MODEL. A TECHNIQUE FOR ASSESSING	THE ANALYTIC SCIENCES CORPORATION, SIX JACOB WAY, ...
1MLD 49821MA	TASCFORM-AIR MODEL-- A TECHNIQUE FOR ASSESSING	THE ANALYTIC SCIENCES CORPORATION, SIX JACOB WAY, ...

Figure 5

Figure 6 is a page from a listing of data for inserting 111 documents into STAIRS at the AFLMC. The complete listing is contained in [8]. These data were generated by the present data entry system for documents which are candidates for inclusion in the AFLMC Bibliography [3]. The actual entries came from DD Forms 1473, or abstracts from DLSIE, or from the individual documents themselves.

5. A handbook of models and source data

The present section outlines a particular set of criteria for analyzing logistics models, namely, the following.

1. Problem background
2. Objectives (primary, secondary,...)
3. Pertinent variables
4. Measurements and indexes
5. Modeling (deterministic, stochastic, relationships,...)
6. Analytical techniques
7. Validation or measures of effectiveness
8. Inventory of data files
9. Inventory of computer programs
10. Numerical examples
11. Applicability and intended users
12. Critical comments
13. References

This set is an expansion of the entries in the data banks at DLSIE, Fort Lee, VA, which are used to prepare the model abstracts in Section 3 above and the regularly published "Catalog of Logistics Models."

Reference [10] illustrates the type of analyses that might be included in a "Handbook of Models and Source Data" for a few models of major importance to a command such as the AFLMC. (And there would be no better place to search for candidate models than the publications of DLSIE.) The sortie-generation model of the Logistics Management Institute, as presented in [1], is the example used to illustrate this approach to model analysis.

See (4) in the next section for the summary recommendation concerning implementation of such a handbook.

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DOCUMENT-NUMBER	*** GWU 00303	02084001
DATE	0A0 1983	02084002
TITLE	010 An Analysis of Air Force EOQ Data with an	02084003
	Application to Reorder Point Calculation	02084004
AUTHOR	020 C. R. Mitchell	02084005
	R. A. Rappold	02084006
	W. B. Faulkner	02084007
REPORT-NUMBER	030 VOL. 29, PP. 440-446	02084008
PERFORMER	050 Management Science	02084009
DOCUMENT-NUMBER	*** GWU 00304	02085001
DATE	0A0 1979	02085002
TITLE	010 Determination of Shipboard Repair Parts Level	02085003
AUTHOR	020 Samuel D. Judge	02085004
	Palmer Luetjen	02085005
REPORT-NUMBER	030 APRIL, PP.37-43	02085006
PERFORMER	050 Naval Engineers Journal	02085007
DOCUMENT-NUMBER	*** GWU 00305	02086001
DATE	0A0 1978	02086002
TITLE	010 Spares Provisioning for Repairable Items:	02086003
	Cyclic Queues in Light Traffic	02086004
AUTHOR	020 Donald Gross	02086005
	John F. Ince	02086006
REPORT-NUMBER	030 VOL. 10, PP. 307-314	02086007
PERFORMER	050 AIEE Transactions	02086008

Figure 6

6. Recommendations

We make five general recommendations.

(1) The DLSIE studies and models tapes should be loaded into STAIRS and analyzed as two data bases of the LSMS.

(2) The DATENT program should be implemented at the AFLMC to assist manual input of data to the LSMS.

(3) The AFLMC should establish requirements for machine readable STAIRS inputs from its major sources of data.

(4) A "Handbook of Models and Source Data," as illustrated by [10], should not be implemented for any sizable number of logistics models; it would be too expensive and it could not be expected to improve on the practice of using the DLSIE data bases, and others, to identify sources which could then be pursued as appropriate to obtain detailed information.

(5) The AFLMC Bibliography [3] should continue to be maintained as a separate data base in the LSMS.

REFERENCES

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[3] BARZILY, Z., W. E. CAVES, W. H. MARLOW, A. RAO and S. ZACKS (1981b). The AFLMC Bibliography. Technical Paper Serial T-456 (LD 52168A).

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[8] CAVES, W. E. and W. H. MARLOW (1983c). A listing of 111 custom inserts. Technical Memorandum Serial TM-72632.

[9] IBM CORPORATION (1981). Terminal User's Guide SB21-2783-1. Storage and Information Retrieval System/Conversational Monitor System (STAIRS/CMS). Field Developed Program Number 5785-CAH.

[10] MARLOW, W. H. and S. ZACKS (1983). Some criteria for model analysis in a handbook of models and source data. Technical Paper Serial T-477.